IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

POWER INTEGRATIONS, INC., a Delaware corporation, Plaintiff, v. FAIRCHILD SEMICONDUCTOR INTERNATIONAL, INC., a Delaware corporation, and FAIRCHILD SEMICONDUCTOR CORPORATION, a Delaware corporation, Defendants.	C.A. No. 04-1371 JJF

POWER INTEGRATIONS' OPENING CLAIM CONSTRUCTION BRIEF

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I. INTRODUCTION

This patent case is unusual in a respect that is the focus of these claim construction proceedings: the most important term in dispute, "DMOS," is nowhere to be found in the '075 patent for which Fairchild wants the term construed. Fairchild instead wants the Court to say the claim does **not** cover "DMOS," as Fairchild now defines it, so that Fairchild has some defense to infringement of the '075. Power Integrations does not dispute that it disclaimed coverage of the DMOS prior art distinguished during prosecution. However, that fact is of no help to Fairchild, whose accused structure is not "DMOS" as that term was used at the relevant time and whose own opinion counsel agrees with Power Integrations on this dispositive issue. If the Court construes "DMOS" at all, it should adopt the definition that applied at the relevant time.

In other respects, such as Fairchild's attempts either to read limitations into some claims for purposes of noninfringement or to read some claims broadly for purposes of invalidity, this case is garden-variety. The best example of this is Fairchild's proposal for construing the "soft start circuit" claimed in the '366 and '851 patents. Fairchild first argued that "soft start circuit" was subject to section 112(6) – which Power Integrations agrees with – but Fairchild sought to identify as corresponding structure what the specification labeled and distinguished as "Prior Art." Fairchild then thought better of that approach and, recently, changed its proposed construction; Fairchild now says the term is not subject to section 112(6), yet Fairchild's new proposal is still so broad as to read on the same art, so the result is the same.

Fairchild's shifting positions on "soft start circuit" are exemplary. Fairchild has repeatedly changed its positions on other claim terms as well, beyond the Court's schedule for doing so (which required the parties to exchange proposed constructions on August 22). Indeed, as explained below, Fairchild has continued to amend constructions in significant respects even this month (December). The Court should be aware of these shifting sands not because Power Integrations will seek to prevent Fairchild from making

these changes, but because the changes show that Fairchild's positions ultimately are driven by its invalidity and noninfringement contentions rather than the intrinsic evidence.

Power Integrations believes there are few true claim construction disputes that the Court need address, and they are relatively straightforward:

- Whether the Court should construe every allegedly "disputed" term, even those with plain English meanings (no);
- Whether "soft start circuit" should be construed under 35 U.S.C. § 112 ¶ 6 (yes);
- Whether the Court should ignore the prior art discussed in the patent specification and/or during prosecution, as Fairchild suggests, in construing the claims (no); and
- Whether Fairchild should be permitted to read limitations into certain terms (clearly not).

II. NATURE AND STAGE OF THE PROCEEDINGS

Power Integrations sued Fairchild Semiconductor Corporation and Fairchild Semiconductor International, Inc. ("Fairchild") for willfully infringing U.S. Patent Nos. 4,811,075 ("the '075 patent"), 6,229,366 B1 ("the '366 patent"), 6,249,876 B1 ("the '876 patent"), and 6,107,851 ("the '851 patent") on October 20, 2004. The parties have engaged in extensive fact discovery, have exchanged opening technical expert reports, and are now in the process of preparing rebuttal technical expert reports. The claim construction hearing is February 2, and the pre-trial conference is set for May 11, 2006.

III. OVERVIEW

A. The Patents In Suit Break Down Into Two General Categories.

This case involves two different technological arts, both of which, however, relate generally to integrated circuit devices used in power supplies. The first type of technology, in the '075 patent (which Power Integrations will also refer to as the "p-top patent"), relates to the physical structure of a specific high voltage transistor device. The

'075 patent describes and claims an improved high voltage transistor structure that incorporates a top layer—referred to as the "p-top" layer—located in an "extended drain region" of the device. The incorporation of the top layer in the overall structure substantially improves the properties of the device, while at the same time providing for a relatively simple construction process. One other advantage provided by the claimed p-top structure is an improved ability to incorporate the high-voltage structure into a device also having low voltage circuits on the same integrated circuit chip. The invention of the '075 patent formed the base technology for the creation of Power Integrations as a company and allowed Power Integrations to offer the first commercially viable, "fully integrated" integrated circuit device for use in controlling switch mode power supplies.

The second area of technology relates to the circuit design associated with the integrated power supply controllers made by Power Integrations. Three of the patents-in-suit fall into this category (the '366, '851 and '876 patents) and are referred to hereafter as the "the circuit patents." In general, the circuit patents relate to circuit structures within the integrated circuit devices that provide certain functions useful to the overall power supply design into which the chips are incorporated. The three circuit patents relate to two such functions, referred to as "frequency jitter" and "integrated soft start."

"Frequency jitter" refers to a methodology of reducing peak electromagnetic interference (or "EMI") in electronic products which incorporate switching power supplies. These supplies are commonly designed to operate at a substantially fixed frequency – the switching components are controlled so as to switch, or turn on and off, at a substantially fixed rate, typically driven by the frequency of an oscillator (clock) circuit. Because the frequency is fixed and relatively high, however, the switching of the components, particularly the transformer in the power supply, causes a high frequency signal to be injected into the attached devices and to be radiated by the power supply as

electromagnetic waves. [*See* Ex. A[1] ('851 patent) at col. 1:21-40.] These injected and radiated electromagnetic waves interfere with electronic devices; the effects of EMI are most commonly experienced by the lay person as static on a radio or distortion of television pictures and sound. In concept, frequency jitter means that the primary switching frequency is **varied** in a controlled and predetermined manner about a target frequency, to spread out the interference and reduce its intensity at any one frequency level. This technology allows power supply designers to satisfy restrictive EMI standards with smaller, less complicated and less expensive components as compared to the prior art. Both the '851 and '876 patents relate to frequency jitter, but they disclose and claim different circuits and methods for achieving this functionality. The '876 patent discloses and claims a "digital frequency jittering" circuit, while the disclosure of the '851 patent is broader in scope.

The '366 patent relates to "integrated soft start" circuits designed to solve problems associated with starting up a power supply. One problem recognized in the art was that, when first starting up, large "inrush" currents could be formed in the power supply components. Such inrush currents could lead to various problems, and they generally required power supply designers to incorporate larger and more expensive components in the power supplies than would otherwise be necessary during normal operation. The term "soft start functionality" generically refers to various methods for limiting inrush currents at start up to avoid these problems [*see* Ex. B ('366 patent) at col. 2:66-67], which in the prior art was accomplished through the use of various components external to the controller chip. The '366 patent describes and claims new circuit structures that allow the soft start functionality to be fully **integrated** into a power supply controller chip, without the need for any external components, in a manner that improves the predictability and controllability of the soft start operation over the prior art methods.

[1] All citations herein are to the accompanying Declaration of Michael R. Headley, unless otherwise noted.

IV. ANALYSIS

A. Standards For Claim Construction

Because the Court is familiar with the relevant standards for claim construction, Power Integrations provides only an abbreviated overview for the Court's reference.

Although the intrinsic evidence and, in some cases, extrinsic evidence, may shed light on the meaning of claim terms, "the claim construction inquiry . . . begins and ends in all cases with the actual words of the claim." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1248 (Fed. Cir. 1998). After first looking at the claims themselves, the analysis next turns to an evaluation of the other "intrinsic evidence," namely the specification and the prosecution history. *See Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). "[T]he specification is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005) (en banc) (internal quotations and citation omitted). "The specification is, thus, the primary basis for construing the claims." *Id.* (internal quotations and citation omitted). The Court may look to extrinsic evidence in the process of claim construction, but this approach "is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence." *Id.* at 1319.

A claim limitation subject to 35 U.S.C. § 112, ¶ 6 "shall be construed to cover the corresponding structure . . . described in the specification and equivalents thereof." *See Mas-Hamilton Group v. LaGard, Inc.*, 156 F.3d 1206, 1211 (Fed. Cir. 1998) (quoting *Chiuminatta Concrete Concepts v. Cardinal Indus., Inc.*, 145 F.3d 1303, 1308 (Fed. Cir. 1998)). Although a claim that does not employ "means for" language is presumed not to invoke section 112(6), the presumption is only a starting point for purposes of claim construction and is overcome when a limitation does not recite "definite structure" and

thus "lacks a reasonably well understood meaning in the relevant [] art." *See id.* at 1213-14.

B. The '876 Patent – Asserted Claims

The '876 patent, also referred to as the "digital frequency jitter" patent, describes and claims circuits and methods for jittering the frequency of a power supply controller about a target frequency to reduce EMI caused by a power supply. Because the construction issues raised by the parties' contentions as to this patent are the most straight-forward, Power Integrations treats this patent first.[2]

1. Claim 1

Asserted claim 1 recites

> 1. A digital **frequency jittering** circuit for varying the switching frequency of a power supply, comprising:
>
> > an oscillator for generating a signal having a switching frequency, the oscillator having a control input for varying the switching frequency;
> >
> > a digital to analog converter coupled to the control input for varying the switching frequency; and
> >
> > a counter **coupled** to the output of the oscillator and to the digital to analog converter, the counter causing the digital to analog converter to adjust the control input and to vary the switching frequency.

a. "Frequency jittering"

In the context of the patents-in-suit, "frequency jittering" refers to varying the switching frequency of a switch mode power supply about a target frequency in order to reduce electromagnetic interference. In the Summary of the Invention, the '876 patent states "EMI emission is reduced by jittering the switching frequency of a switched mode power supply." [Ex. C ('876 patent) at col. 1:66-67.] More particularly, the '876 patent discloses and claims a digital frequency jittering circuit that utilizes a counter and a digital-to-analog converter ("DAC") to vary the frequency of an oscillator to accomplish

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[2] A table of Power Integrations' proposed constructions is attached as an appendix.

the EMI reduction. The specification further explains that "the jittering operation smears the switching frequency of the power supply over a wide frequency range and thus spreads energy outside of the bandwidth measured by EMI measurement equipment. By changing the oscillator frequency back and forth, the average noise measured by the EMI measurement equipment is reduced considerably." [*Id.* at col. 3:59-65.] Thus, the purpose of the frequency jittering circuit is to vary the frequency in a controlled manner to achieve EMI reduction.

The '876 patent also incorporates by reference the application that lead to the '851 patent, which is also at issue in this case. [*Id.* at col. 6:6-12.] The '851 patent describes a preferred embodiment for frequency jittering that uses analog circuit components, and also uses the terminology "frequency jittering." The '851 patent states that "varying the frequency of operation of the pulse width modulated switch by varying the oscillation frequency of the oscillator is referred to as frequency jitter." [Ex. A ('851 patent) at col. 3:28-30.] Although the '851 patent refers to this function broadly, it explains that the frequency jittering functionality of the disclosed invention is better than the methods of EMI reduction in the prior art because the invention introduces jitter to the switching frequency in a known and controlled manner:

> "pulse width modulated switch 262 may also have frequency jitter functionality. That is, the switching frequency of the pulse width modulated switch 262 varies according to an internal frequency variation signal. This has an advantage over the frequency jitter operation of FIG. 1 [the prior art] in that the frequency range of the presently preferred pulse width modulated switch 262 is known and fixed, and is not subject to the line voltage or load magnitude variations."

[*Id.* at 6:11-17.] Thus, the '876 patent and the '851 patent both explain that "frequency jittering" in this context refers to a controlled and predetermined variation in the frequency of a signal having a target frequency (in this case the signal switching the power supply), in order to reduce EMI.

Fairchild's original construction of frequency jittering was "a small and **uncontrolled** variation in the frequency of a signal around a primary frequency, i.e.

noise." [Ex. H at 5 (emphasis added).] Fairchild relied upon a dictionary definition of "jitter" from a completely different context for this construction. Sometime later, apparently recognizing the fundamental disconnect between its construction and the teaching in both the '876 and '851 patents as to the importance of controlling the jitter in a known way, Fairchild changed its construction from one intended to avoid infringement ("uncontrolled") to a broader construction intended to sweep in as much prior art as possible ("an intentional modulation or variation in the frequency of a signal"). [*Compare* Ex. H at 5 with Ex. I at 3.] The flaw in Fairchild's updated construction, however, was that, although it was correct to a point, it encompassed any "intentional" change in frequency, regardless of its purpose or nature. It also omits the notion of jittering or varying the frequency of a signal "around a primary frequency," which is what the jitter function in these patents is all about and which Fairchild had therefore properly included in its original construction.

Very recently, Fairchild again amended its construction, this time to read "varying the frequency of operation of the pulse width modulated switch by varying the oscillation frequency of the oscillator." [Ex. K at 3.] Fairchild's third construction is again overbroad, as it says nothing about controlling the variation and nothing about a primary or target frequency. Fairchild relies for this third construction on a portion of the '851 patent describing generic jitter functionality, including that of the prior art that the patent expressly distinguishes from the invention. [*See* Ex. A ('851 patent) at col. 3:30-37; 6:14-17.] Fairchild's third construction in fact would read on the admitted prior art in the '851 patent, which is contrary to well-established precedent.

Power Integrations asks the Court to construe "frequency jittering" consistent with the disclosure of the specification of both patents to refer to "**a controlled and predetermined change or variation in the frequency of a signal**." This "controlled and predetermined change" is the only kind of variation that can accomplish the goal of

the inventions to reduce EMI in a switching power supply in a manner that overcomes the failings of the prior art expressly noted by the inventors.

b. "Coupled"

The term "coupled" is often used in patent claims and has often been construed by Courts. Here again Fairchild seeks a broad, generic construction to encompass prior art that is fundamentally different from the invention. Fairchild's construction is that "two circuits are coupled when they are configured such that signals pass from one to the other." [Ex. K at 3.] Power Integrations, on the other hand, seeks a construction that is consistent with the patent claim language and specification. Its construction is that "two circuits are coupled when they are connected such that voltage, current, or control signals pass from one to the other." [Ex. G at 3.]

The disputed term appears in the language "a counter coupled … to the digital to analog converter." It is the relationship between the counter and the DAC that implicates the prior art. On their face, the parties' constructions do not appear to differ a great deal, but the difference is meaningful. Simply put, Power Integrations' construction is intended to be consistent with the claim language that the counter be coupled to the DAC such that the "counter [is] causing the digital to analog converter to adjust the control input and to vary the switching frequency." [*See* Ex. C ('876 patent) claim 1.] Fairchild's construction, on the other hand, would read on a circuit where there is a memory device, or ROM, between the counter and DAC, and in which the programming of the ROM (rather than the counter output) controls the DAC. Such an architecture is fundamentally different from, and contrary to, the teaching of the patent.

The specification describes the claimed components and their relationship and provides the essential context for claim construction. "Counter 140 has a plurality of outputs Q1-Q3 (not shown) which are not used. The remaining outputs Q4-Q7 are connected to a digital-to-analog (D-to-A) converter 150, which may be implemented as a series of frequency jittering voltage sources or current sources." [*Id.* at col. 4:62-66.]

"Additionally, when combinations of outputs Q4-Q7 are turned on, the outputs of the respective current sources 152, 156, 160 and 164 [in DAC 150] are added to the output of current source 122 to vary the frequency of the primary oscillator 110. In this way, counter 140 drives a plurality of current sources…such that the frequency of the primary oscillator 110 is varied." [*Id.* at col. 5:49-55.] Figure 2 shows how the frequency is varied directly under the control of the counter outputs. Accordingly, it is the counter output that "drives" the DAC to bring about the frequency change. [*See also id.* at col. 2:7-9 ("The counter causes the digital to analog converter to adjust the control input and to vary the switching frequency.").]

Fairchild's construction is overly broad and ambiguous, as it refers only to undefined "signals" passing between circuits. Because the recited coupling (between the various components of the claim) is present for the purposes of "control" (i.e. "digital to analog converter coupled to the control input for varying the switching frequency" and "counter coupled to the … digital to analog converter, the counter causing the digital to analog converter to adjust…"), Power Integrations has offered a construction that reflects the nature of the recited coupling.[3] Specifically, "coupled" as used in the claim should be construed to mean that "**two circuits are coupled when they are connected such that voltage, current or control signals pass from one to the other**."

2. Claim 17

Claim 17 and its dependent claims are recited in method form and are directed to one of the two implementations described in the specification – using variations in voltage to drive the frequency jitter operation. [*See, e.g.*, *id.* at col. 4:63-66 ("The remaining outputs Q4-Q7 are connected to a digital-to-analog (D-to-A) converter 150, which may be implemented as a series of frequency jittering voltage sources or current

[3] The claim also recites that the counter is coupled to the output of the oscillator. Again, consistent with Power Integrations' construction, the coupling provides that the oscillator output drives (or "clocks") the counter to cause it to change state.

sources.”).] The language of the claims is rather simple and should be understandable by a jury with little or no construction. Fairchild’s proposals, however, are a transparent attempt to read limitations into these relatively simple claims to manufacture a non-infringement position. Fairchild’s “disputes” center around the claims’ use of the terminology associated with primary, secondary and supplemental voltages. Claim 17 recites:

> 17. A method for generating a switching frequency in a power conversion system, comprising:
>
> generating a **primary voltage**;
>
> **cycling** one or more **secondary voltage sources** to generate a **secondary voltage** which varies over time; and
>
> **combining** the secondary voltage with the primary voltage to be received at a control input of a voltage-controlled oscillator for generating a switching frequency which is varied over time.

a. “Primary voltage”

A “primary voltage” is simply “**a base or initial voltage**.” [*See generally* Ex. L at 934.] The ’876 patent specification describes two alternate embodiments, one relying on changing a current provided by a DAC to vary the frequency of a current controlled oscillator, the other relying on changes in a voltage provided by a DAC to vary the frequency of a voltage controlled oscillator. Although the majority of the disclosure in the specification focuses on the current-based DAC implementation, voltage-based DACs and voltage controlled oscillators (“VCOs”) were referred to and are well-known in the art. [Declaration of Robert Blauschild (“Blauschild Decl.”) ¶ 4.] The specification provides specific disclosure of the voltage-based option at col. 2 lines, 42-55 and col. 3, lines 10-22.

Fairchild does not dispute what a “primary voltage” is. It instead declares without support that the primary voltage must be limited to a voltage “generated by a primary voltage **source**.” This is an extraneous limitation. The claim says nothing about how the

"primary voltage" must be generated.[4] The purpose of this artificial limitation becomes apparent when one reads Fairchild's construction of "secondary voltage sources" – according to Fairchild, these secondary sources must be "distinct" from the primary voltage "source" found only in Fairchild's construction of "primary voltage." Because nothing in the patent claim language, specification, or prosecution history limits "primary voltage" to a voltage generated solely by a "primary voltage source," the Court should adopt Power Integrations' proposed construction.

b. "Secondary voltage sources"

The claim recites "cycling one or more secondary voltage sources to generate a secondary voltage that varies over time." The parties disagree as to the meaning of this entire clause but have parsed the language and addressed the construction of the components rather than the clause as a whole. Initially, to construe the claim, one must construe the term "voltage source." Power Integrations believes that voltage source should be construed in accordance with its plain meaning—i.e. a source of voltage. [Blauschild Decl. ¶ 5.] "Secondary" in its plain meaning refers to something that comes second or subsequent. [*See, e.g.,* Ex. L at 1060.] As recited in the '876 patent, the secondary voltage sources should therefore be construed to mean "**one or more voltage sources used to generate the secondary voltage**." Contrary to Fairchild's assertion, nothing in the claims or specification requires the secondary voltage sources to be independent or "distinct" from the source of the primary voltage or the alleged "primary voltage source" which, as noted above, is not recited anywhere in the claim.

c. "Secondary voltage"

The plain meaning of "secondary voltage" in this context would be "**a subsequent or additional voltage**." [*See supra* re "secondary voltage sources."] Fairchild's construction seems superfluous because the claim language itself plainly

[4] By contrast, as discussed next, the claim does place some limitations on how the secondary voltage is generated.

recites that the secondary voltage is generated by the one or more secondary voltage sources.

d. "Cycling"

Power Integrations does not believe this term requires construction. It should be subject to plain, English-language interpretation in the context in which it is used ("cycling one or more secondary voltage sources to generate a secondary voltage that varies over time"). On the other hand, Fairchild's proffered construction—"a periodic change of the controlled variable"—is confusing and unrelated to the claim language. What, the Jury will wonder, is a "controlled variable?" If the Court believes "cycling" requires construction, though, Power Integrations proposes the following construction: "cycling" means "**using in a repeating sequence or a pattern**." Therefore, the claim limitation would be construed in its entirety to mean "using in a repeating sequence or pattern, one or more voltage sources to generate a subsequent or additional voltage that varies over time."

e. "Combining"

Power Integrations does not believe this term requires construction. It should be subject to plain, English-language interpretation. On the other hand, Fairchild again requests a construction that manufactures limitations. Fairchild's proposed construction for the simple word "combining" requires adding together *from two or more different sources*. [Ex. K at 4.] The Court should reject Fairchild's suggested additional limitation and provide no construction of this term. The Jury will understand what "combining" means. However, if the Court believes this term requires construction, Power Integrations proposes "combining" be construed to mean "**adding together**."

3. Claim 19

Claim 19 of the '876 patent depends from claim 17 and introduces the concept of "supplemental" voltages, each of which, in context, is a component of the "secondary voltage" discussed above. Claim 19 recites:

19. The method of claim 17 wherein the primary voltage is V and each of the secondary voltage sources generates a **supplemental voltage** lower than V, further comprising passing the supplemental voltage to the voltage-controlled oscillator.

a. "Supplemental voltage"

Again, the terminology "supplemental" is plain English, and Power Integrations does not believe this term requires construction. Fairchild, however, seeks to construe the term to mean "a voltage other than the primary or secondary voltage." This construction conflicts with the claim language. As recited in claim 17, the one or more secondary voltage sources, together, generate **a** secondary voltage. As recited in claim 19, each secondary voltage source itself generates a supplemental voltage (whose magnitude is lower than V, the magnitude of the primary voltage). Therefore, reading the claims together, the secondary voltage would be the sum total of the supplemental voltages (each generated by one secondary voltage source). Thus, all of the supplemental voltages (of which there are one or more, depending on the point in the "cycle") are summed to form the secondary voltage, which in turn is combined with the primary voltage and passed to the voltage controlled oscillator to determine the switching frequency. As the cycle continues, the secondary voltage (and thus the combined voltage output) varies over time, and the frequency of the oscillator varies accordingly. There is no need to go beyond the plain language of the claims, and Fairchild's construction requiring that a supplemental voltage be something "other than" the secondary voltage is wrong.

If the Court believes the term "supplemental voltage" requires construction, however, Power Integrations proposes the following construction: "**a voltage in addition to the primary voltage**."

C. The '366 and '851 Patents

The '366 patent resulted from a divisional application of the application leading to the '851 patent. As such, the two patents share the same specification. The specification discloses two features of a power supply controller: "integrated soft start" and "integrated

frequency jitter." Because the Patent Office felt that each merited its own patent, Power Integrations divided the claims into two applications leading to two of the patents-in-suit.

The '851 patent primarily claims the frequency jitter functionality but, in dependent claims, also recites a novel combination of the two features. Likewise, the '366 patent is directed primarily to the soft start invention, but it, too, recites in dependent claims the unique combination of the soft start and frequency jitter inventions. Because of the substantial overlap in claim language, Power Integrations addresses the patents together.

Fairchild's claim construction contentions as to these patents have been the subject of multiple shifts in position over the course of the case. Given the latest incarnations, it appears the primary dispute between the parties is whether certain claim limitations should be interpreted under section 112(6). Power Integrations has consistently maintained that the "soft start circuit" limitations of the claims should be construed as subject to section 112(6) and, until recently, Fairchild agreed, although the parties disputed the proper identification of the "corresponding structures." [Ex. G at 2; Ex. H at 9-14; Ex. I at 4-7.] On December 9, 2005, however, Fairchild for the first time asserted it had changed its contention and would argue that the soft start circuit limitations should not be subject to section 112(6). [Ex. J.] Power Integrations has also consistently maintained that the "frequency variation circuit" limitation of the claims encompasses sufficiently definite structure in the view of one of ordinary skill so as to make recourse to section 112(6) inappropriate. For the majority of the case, Fairchild disagreed. [Ex. G at 2; Ex. H at 12-13; Ex. I at 6; Ex. J at 8.] However, on December 20, 2005, Fairchild changed its position on that point as well and now apparently agrees with Power Integrations that the "frequency variation circuit" limitations are not in mean-plus-function form. [Ex. K.] However, the parties dispute what qualifies as the corresponding structure.

The reasons for Fairchild's flip-flopping are clear: it has given up on proving noninfringement and wants the claims construed as broadly as possible to try to invalidate them.

The asserted claims of the '366 patent and the '851 patent share some common terminology. Where the claim language discussed with reference to the '366 patent is also used in the asserted claims of the '851 patent it, of course, should be construed consistently. The converse is also true.

1. '366 Patent Claim 1

1. A pulse width modulated switch comprising:

> a first terminal;
>
> a second terminal;
>
> a switch comprising a control input, the switch allowing a signal to be transmitted between said first terminal and said second terminal according to a drive signal provided at said control input;
>
> an oscillator that provides a **maximum duty cycle signal comprising an on-state and an off-state**;
>
> a drive circuit that provides said drive signal according to said maximum duty cycle signal; and
>
> a **soft start circuit** that provides a signal instructing said drive circuit to disable said drive signal during at least a portion of said on-state of said maximum duty cycle.

a. maximum duty cycle signal comprising an on-state and an off-state

Fairchild initially proposed a definition of this limitation that required the "on-state" to be high and the "off-state" to be low [Ex. H at 13], but Fairchild has since abandoned that theory in lieu of a broader construction: "A signal with an on and an off state." [Ex. I at 6.] Fairchild's latest construction is clearly wrong in one respect (it leaves out "maximum duty cycle") and simply unhelpful in another (it does nothing more than parrot the on-state/off-state language of the claim). Power Integrations' proposed

construction, on the other hand, walks the Jury through the issues in a way that explains the terms: **"A maximum duty cycle signal is a signal the purpose of which is to limit the maximum "on-time" of a power switch during an on/off switching cycle. The on-state is the state of the maximum duty cycle signal that allows the switch to be active or "on" [and is independent of the logic state of the signal itself]. Correspondingly, the off-state is the state of the maximum duty cycle signal that results in the switch being placed or held in its inactive or "off" condition [and, again, is independent of logic state."]** If Fairchild represents that the logic state issue is no longer disputed (i.e., it does not matter whether one state is represented logically by a "low" instead of a "high" signal, or vice versa), the Court can drop the bracketed phrases and further simplify the construction.

b. Soft start circuit[5]

Although the "soft start circuit" claim limitation is written primarily in functional terms, the magic term "means" is not explicitly used, leading to the legal presumption that 35 U.S.C. § 112(6) does not apply. *See Mas-Hamilton Group v. LaGard, Inc.*, 156 F.3d 1206, 1213-14 (Fed. Cir. 1998). This presumption, however, is overcome here because, while one of skill in the art could conceive of various "soft start circuit" structures to accomplish the recited function, he would be left uncertain from the claim language alone as to what specific structure or class of structures was covered by the claim. *Id.*; [Blauschild Decl. ¶ 6.] This is especially true given that the literal language of the claim limitation could be considered to encompass the "soft start capacitor 110," which is explicitly addressed and referred to as "Prior Art" in the "Background of the Invention" section of the patent, in addition of course to the separately shown and

[5] The parties disagree with respect to the construction of the various incarnations of the term "soft start circuit" in the '366 patent, but the disagreement is with respect to the fundamental issue of whether to construe the limitations as subject to 35 U.S.C. § 112(6) and, if so, what is the appropriate corresponding structure. The parties do not dispute that the functional language of the various incarnations of the soft start circuit recited in the asserted claims should be construed in accordance with its plain English-language meaning.

described soft start circuit 410, which the patent is about.[6] [*See* Ex. B ('366 patent) at Fig. 1 ("Prior Art"); col. 2:65-3:5 ("Inrush currents are minimized at start up by the use of soft start capacitor 110. Soft start functionality is termed to be a functionality that reduces the inrush currents at start up. At this instant a current begins to flow through feedback resistor 80 and thereby into soft start capacitor 110. As the voltage on soft start capacitor 110 increases slowly, current will flow through light emitting diode 155 of optocoupler 70 thereby controlling the duty cycle of the switch.").] Of course, one of ordinary skill would presume that the claim was not intended to cover, and the patent examiner clearly did not interpret it to cover, the very prior art disclosed and distinguished from the invention in the text of the patent specification. *See SRI Intern. v. Matsushita Elec. Corp. of America*, 775 F.2d 1107, 1121 (Fed. Cir. 1985) ("[T]hat claims are interpreted in light of the specification does not mean that everything expressed in the specification must be read into all the claims." (internal quotations and citations omitted)); *cf. Arthur A. Collins, Inc. v. Northern Telecom Ltd.*, 216 F.3d 1042, 1044-45 (Fed. Cir. 2000) (evaluating the status of prior art disclosed in the specification to determine the meaning of claim terms). In order to understand the class of structures referenced by the recitation of "soft start circuit" in the claims, one of skill in the art would refer instead to the portion of the disclosure describing the inventive circuit. Since one can only know what type of "soft start circuit" is claimed by referring to the specification, it is appropriate to construe this claim limitation as subject to section 112(6). *Mas-Hamilton*, 156 F.3d at 1213-14.

Fairchild originally agreed with this conclusion [Ex. H at 9-14; Ex. I at 4-7] but changed its mind as of December 9. Fairchild now asserts that "soft start circuit" should be construed to mean "a circuit that minimizes inrush currents at start up." [Ex. J; Ex. K at 5.] Of course this construction reads directly on the very disclosure in the patent

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6 As explained more fully below, this is exactly the position originally taken by Fairchild in its claim construction contentions.

specification that is labeled "Prior Art" and was distinguished in the specification from the claimed invention.

The '366 patent, in the Background section, describes generic soft start "functionality." [Ex. B ('366 patent) at col. 2:66-67 ("Soft start functionality is termed to be a functionality that reduces the inrush currents at start up.").] The specification also says that the "prior art" external soft start capacitor shown in Figure 1 provides such "functionality."[7] [*Id.* at col. 2:65-66 ("Inrush currents are minimized at start up by the use of soft start capacitor 110.").] Immediately thereafter, the specification goes on to explain various problems with using an external capacitor to provide soft start "functionality." [*Id.* at col. 3:5-16.] Nowhere in the specification is the claimed "soft start **circuit**," however, equated with capacitor 110. The terminology "soft start circuit" is only used to describe <u>the invention</u>, which is integrated into the controller and is not external like the prior art soft start capacitor 110. That "soft start circuit" is linked only to the inventive circuit and not to the prior art external capacitor is further reason that the term "soft start circuit" should be construed in accordance with section 112(6). *See Cross Medical Products, Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1308-09 (Fed. Cir. 2005) ("A structure disclosed in the specification qualifies as 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." (quoting *Default Proof Credit Card Sys., Inc. v. Home Depot U.S.A., Inc.*, 412 F.3d 1291, 1298 (Fed.Cir.2005)). Specifically, the structures corresponding to the soft start circuit are disclosed in Figures 3, 6 and 9 and their associated discussion at 6:7-17; 6:35-7:18; 11:40-50 and 12:5-10.

In its original contentions, Fairchild did not dispute that these portions of the specification correspond to the claimed soft start circuit. Instead, as noted above, Fairchild argued that the corresponding structure should **also** include "the circuit shown

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[7] Figure 1 of the '366 patent is clearly labeled "Prior Art."

in Figure 1 including capacitor 110." [Ex H at 13-14.] This is wrong for two reasons. First, the circuit shown in Fig. 1 including capacitor 110 is never linked at all with the claimed "soft start circuit" limitation, let alone linked clearly enough to qualify as corresponding structure. Second, the Court should apply the well-settled "it makes absolutely no sense" principle. Fairchild asks the Court not only to ignore the presumption of validity, but also to presume that the patent examiner was so incompetent and foolish as to allow claims that would be anticipated on the face of the very patent he was allowing.[8] *See Applied Materials, Inc. v. Advanced Semiconductor Materials America, Inc.*, 98 F.3d 1563, 1569 (Fed. Cir. 1996) ("The presumption of validity is based on the presumption of administrative correctness of actions of the agency charged with examination of patentability."). Accordingly, the Court should reject Fairchild's shifting arguments, construe the soft start limitation of the asserted claims to be subject to 35 U.S.C. § 112(6), and identify the structure corresponding to the claims to be shown in Figures 3, 6 and 9 of the '366 patent specification and described in the associated discussion at 6:7-17; 6:35-7:18; 11:40-50 and 12:5-10.

2. '851 Patent Claim 1[9]

Claim 1 of the '851 patent recites:

1. A pulse width modulated switch comprising:

> a first terminal;
>
> a second terminal;
>
> a switch comprising a control input, said switch allowing a signal to be transmitted between said first terminal and said second terminal according to a drive signal provided at said control input;

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[8] The only way for Fairchild to import what is explicitly described as the prior art into the claim is to argue that the specification is somehow ambiguous as to the corresponding structure for the soft start circuit, but in that circumstance the Court would not follow Fairchild's suggestion in light of the maxim that ambiguous claims should be construed to preserve their validity. *Phillips*, 415 F.3d at 1327.

[9] Asserted independent claim 11 is substantially similar.

> **a frequency variation circuit that provides a frequency variation signal**;
>
> an oscillator that provides an oscillation signal having a frequency range, said frequency of said oscillation signal varying within said frequency range according to said frequency variation signal, said oscillator further providing a maximum duty cycle signal comprising an first state and a second state; and
>
> a drive circuit that provides said drive signal when said maximum duty cycle signal is in said first state and a magnitude of said oscillation signal is below a variable threshold level.

The only disputed claim language in the ’851 patent which is not also part of the ’366 patent is “a frequency variation circuit that provides a frequency variation signal.” As noted above, Fairchild originally asserted that this claim limitation should be interpreted under section 112(6) but has recently dropped that contention and now agrees with Power Integrations that the “frequency variation circuit” should be construed as “a structure that provides the frequency variation signal.”[10] What remains in dispute however, is the construction of “frequency variation signal.”

The term “frequency variation signal” is not a term of art, nor would it have had a plain and ordinary meaning to one of skill in the art at the time of the invention. [Blauschild Decl. ¶ 7.] As such, one must look to the specification and file history to understand the proper meaning of the terminology in the context of the claimed invention. *See Phillips*, 415 F.3d at 1315-18. The specification defines “frequency variation signal” in several places, including specifically by contrasting such a signal (and circuit) from the known prior art discussed in the patent specification.

The specification explains the frequency variation signal as follows (emphasis added):

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[10] Unlike the claimed soft start circuit, once the meaning of “frequency variation signal” is clear, one of ordinary skill would immediately have in mind a class of structures that would be the “circuit” for generating such a signal. Blauschild Decl. ¶ 8. Accordingly, the presumption against applying section 112(6) in this instance is appropriate.

> Alternatively, or in addition to soft start functionality, pulse width modulated switch 262 may also have frequency jitter functionality. That is, the switching frequency of the pulse width modulated switch 262 varies according to an **internal frequency variation signal**. This has an advantage over the frequency jitter operation of FIG, 1 in that **the frequency range of the presently preferred pulse width modulated switch 262 is known and fixed**, and is not subject to the line voltage or load magnitude variations. [Ex. A ('851 patent) at col. 6:10-17.]

> Referring to FIG. 3, *frequency variation signal 400* is utilized by the pulse width modulated switch 262 to vary its switching frequency within a frequency range. The frequency variation signal 400 is provided by frequency variation circuit 405, which preferably comprises an oscillator that operates at a lower frequency than main oscillator 465. The frequency variation signal 400, is presently preferred to be a triangular waveform that preferably oscillates between four point five (4.5) volts and one point five (1.5) volts. Although the presently preferred frequency variation signal 400 is a triangular waveform, **alternate frequency variation signals such as ramp signals, counter output signals or other signals that vary in magnitude during a fixed period of time may be utilized as the frequency variation signal**. [*Id.* at col. 6:25-38.]

> If the frequency variation signal 400 is a ramp signal, the frequency would linearly rise to a peak and then immediately fall to is lowest value. In this way, the current provided to current source input 485 of PWM oscillator 480 **is varied in a known fixed range** that allows for easy and accurate frequency spread of the high frequency current generated by the pulse width modulated switch. [*Id.* at col. 7:43-49.]

> That is, the switching frequency of the regulation circuit 850 varies according to **an internal frequency variation signal.** This has an advantage over the frequency jitter operation of FIG. 1 in that **the frequency range of the presently regulation circuit 850 is known and fixed**, and is not subject to the line voltage or load magnitude variations. [*Id.* at col. 11:45-50.]

Viewing the discussion in the specification as a whole, the characteristics of the claimed frequency variation signal are clear. The purpose of the frequency variation signal is to bring about a change in frequency that is within a predetermined range and varies in a known and fixed manner. As explained in the patent, this invention has advantages over the prior art attempt to reduce EMI, which did provide a change in frequency but only one that was uncontrolled and varied with line voltage and output load—factors external to the controller chip, which thus could not be predetermined or anticipated. The claimed invention solves this problem by providing an internal signal that is predetermined and, therefore, predictable. The examples provided in the

specification for potential frequency variation signals—a triangle wave form, ramp signal, counter output signals or other signals that vary in magnitude during a fixed period of time—all share this common characteristic. The other feature they all share is that they can be used to vary the frequency of the oscillator in a known and fixed range to "spread the high frequency current" to reduce EMI.[11]

Fairchild's latest position with regard to the frequency variation signal—that it should be construed to mean "a signal used to vary the frequency of the oscillation signal"—is again overly broad and legally erroneous because it would read on the very prior art discussed and repeatedly distinguished in the specification of the patent. Fairchild's construction would encompass <u>any type of variation</u>, including specifically the random variation based on line voltage and output load of the known prior art of Figure 1. As explained above in response to Fairchild's similar position as to soft start circuit, a proposed construction that reads on the very prior art distinguished in the patent must be rejected. Fairchild's construction would also read on PWM circuits that changed frequency for reasons completely apart from EMI reduction and in manners that would not effect EMI at all—clearly a move intended to sweep in prior art far afield of the claimed invention.[12] Accordingly, the Court should reject Fairchild's attempt to read the words of the claims out of context and, instead, should construe frequency variation signal in accordance with the clear definition in the specification to mean "**an internal signal that cyclically varies in magnitude during a fixed period of time and is used to modulate the frequency of the oscillation signal within a predetermined frequency range**."

[11] *See also supra* re "frequency jitter" in the context of the '876 patent.

[12] In his opening report on invalidity, Fairchild's expert Paul Horowitz attempts to rely on prior art PWM controllers that operated at a reduced frequency (either at start up or under short circuit conditions) for reasons totally unrelated to EMI reduction.

3. ’851 Patent Claim 4[13]

Claim 4 depends from claim 1 and recites the combination of claim 1 with a “soft start circuit.” Specifically, claim 4 recites:

> 4. The pulse width modulated switch of claim 1 further comprising a soft start circuit that provides a signal instructing said drive circuit to discontinue said drive signal when said magnitude of said oscillation signal is greater than a magnitude of said frequency variation signal.

Initially, “soft start circuit” as recited in this claim should be construed consistently with the same limitation recited in the ’366 patent as discussed above. In other words, it should be construed in accordance with 35 U.S.C. § 112(6) to encompass the corresponding structures discussed above (and their structural equivalents).

There is one additional point worth noting with respect to claim 4 of the ’851 patent, although it does not appear to be the subject of an express dispute. This claim recites that the soft start circuit instructs the drive circuit to discontinue the drive signal specifically in response to the oscillation signal magnitude exceeding that of the frequency variation signal. In other words, unlike the independent “soft start” claims, this claim specifically recites that both the frequency variation and the soft start functions depend on the very same signal (the frequency variation signal) for their operation. As such, this claim requires not only that both functions be present, but that they interact in a particular way.[14]

4. ’366 Patent Claim 14

Asserted claim 14 of the ’366 patent recites:

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[13] Asserted dependent claim 13 is substantially similar.

[14] It is interesting to note that, when Fairchild asserted that section 112(6) applied to “soft start circuit,” its contention as to the corresponding structure for this claim was different than that for the independent claim. *See* Ex. H at 12-13. Specifically, unlike for the independent claim, Fairchild did not assert that the corresponding structure for this dependent claim included external capacitor 110. Why? Because Fairchild apparently recognized that the patents’ description of the prior art did not show the required interaction between the two functions recited in this claim.

> 14. The regulation circuit of claim 9[15] further comprising a **frequency variation circuit that provides a frequency variation signal** and wherein said maximum time period varies according to a magnitude of said frequency variation signal.

Claim 14 of the '366 patent is similar to claim 4 of the '851 patent in that it recites a combination of the soft start circuit recited in independent claim 9 with a "frequency variation circuit." Frequency variation circuit and frequency variation signal as used in this claim should be construed to have the same meaning addressed above concerning claim 1 of the '851 patent. One point worth noting, however, is that although the claim specifically recites that the frequency variation circuit affects the frequency of the oscillator, unlike '851 patent claims 4 and 13, it does not specifically recite that the soft start circuit discontinues the drive signal in response to the frequency variation signal. In other words, the interactions between the two circuits described by this claim are materially different from that of the '851 dependent claims.

D. The '075 / "p-top" Patent

As noted above, the '075 patent covers a specific high voltage device structure and as such is directed to very different subject matter from that of the circuit patents. In addition to the "DMOS" issue noted at the outset, Power Integrations believes the parties dispute the construction of a number of other terms in the '075 patent but, because Fairchild has changed its proposed constructions a number of times, the true disputes are obscured. Fairchild has not changed its non-infringement contentions, however, so Power Integrations believes the Court's guidance on certain terms other than "DMOS" is necessary to prevent Fairchild from arguing yet another new theory at trial.

1. Claim language

Independent claim 1 contains all the claim terms in the '075 patent that may require construction (indicated by bold type). Claim 1 recites:

> 1. A high voltage **MOS transistor** comprising:

[15] Claim 9 is substantially the same as claim 1. The only dispute for claim 9 is subsumed in the discussion of "soft start circuit," above.

> a semiconductor **substrate** of a first conductivity type having a surface;
>
> **a pair of laterally spaced pockets of semiconductor material of a second conductivity type within the substrate** and adjoining the substrate surface,
>
> a source contact connected to one pocket,
>
> a drain contact connected to the other pocket,
>
> an extended drain region of the second conductivity type extending laterally each way from the drain contact pocket to surface-adjoining positions,
>
> **a surface adjoining layer of material of the first conductivity type on top of an intermediate portion of the extended drain region between the drain contact pocket and the surface-adjoining positions**,
>
> **said top layer of material** and said substrate **being subject to application of a reverse-bias voltage**,
>
> an insulating layer on the surface of the substrate and covering at least that portion between the source contact pocket and the nearest surface-adjoining position of the extended drain region, and
>
> a gate electrode on the insulating layer and electrically isolated from the **substrate region thereunder which forms a channel** laterally between the source contact pocket and the nearest surface-adjoining position of the extended drain region, said gate electrode controlling by field-effect the flow of current thereunder through the channel.

a. "DMOS"

This case presents the unusual circumstance where a key term in dispute is not found anywhere in the asserted claims. Fairchild's asserted constructions for the claim language "MOS transistor," "pair of laterally spaced pockets…," "surface adjoining layer of material…" and "substrate region thereunder…" all depend in part on its assertion that Power Integrations disclaimed during prosecution any reading of the claims on a "DMOS" transistor. Accordingly, an analysis of "DMOS" and its use during the prosecution history is a necessary predicate to address Fairchild's arguments. To date, however, Fairchild has not provided a definition of "DMOS" in its claim construction positions. Indirectly, Fairchild has attempted to "define" DMOS by applying that

terminology to its own accused products and then, circularly, arguing they do not infringe because they are the type of "DMOS" allegedly distinguished during prosecution.

Although "DMOS" transistors were discussed during prosecution of the '075 patent, the fundamental flaw in Fairchild's argument is that it attempts to expand the definition of DMOS beyond what was generally understood at the time of prosecution, in a clear effort to encompass structures that did not exist at the time and are not anything like the prior art expressly addressed during prosecution. What Power Integrations specifically distinguished during prosecution were the DMOS devices (shown specifically in the prior art of record) that existed at the time and were entirely different from both the claimed invention and Fairchild's products.

At the time the patent was filed in 1987, the term "DMOS" referred to something different and more specific than the way in which Fairchild now seeks to use the term. [Ex. M at ¶ 18.] Back then, the terminology "DMOS" (originally "DDMOS" but later shortened) applied to a transistor structure developed in the 1970s by Philips and referred to the process by which it was made – the "DD" referred to "double-diffused" MOS. Specifically, the double-diffusion process was used to form the channel and source contact regions of the transistor by successively diffusing material of different conductivity types (e.g. p-type followed by n-type) through the same opening in an insulating layer or, similarly, using the same edge of a mask layer. Using the same opening allowed the edges of the different regions to be controlled with precision (a so-called "self-aligning" process). This process allowed for the creation of a transistor (i.e. an n-p-n junction) with a very short channel length – significantly shorter and more accurately controlled than could be achieved by other manufacturing processes existing at the time. **Thus, the precise definition of a "DMOS" device is a device formed by successive diffusions of different materials through the same opening in an insulating or mask layer.** [*Id.*]

This precise double-diffusion method was an important characteristic of DMOS, as that term was ordinarily understood in 1988 when it was discussed during prosecution, and its importance is reflected in the contemporary dictionary definitions. Indeed, the definition of "DMOS" provided by Fairchild's own counsel in an opinion letter regarding infringement dated May 6, 2005 (produced by Fairchild as FCS1413642 to FCS1413745) properly emphasizes the required successive diffusions through the same oxide layer:

> "The ordinary meaning of 'DMOS' devices is 'MOS circuits or transistors that are fabricated using double diffusion. Regions of different conductivity type are formed by successive diffusion of different impurities through the same opening in the oxide layer.' See The Penguin Dictionary of Electronics, 2d ed. (1988), p. 129"

[Ex. N at FCS1413651.] This dictionary definition accurately reflects the common and ordinary understanding of one skilled in the art as to the meaning of "DMOS" at the time relevant to this analysis. [Ex. M at ¶ 21.] Indeed, all formal written definitions located during the course of Power Integrations' expert's analysis were consistent in their emphasis on the process of manufacture using successive, or "double" diffusion through the same opening as the fundamental characteristic of a "DMOS" device. [*Id.*]

The specific prior art reference which was discussed during prosecution and characterized as "DMOS"—the Colak '879 patent—showed a device made using this self-aligned double diffusion process. Figure 1 from the Colak '879 patent (assigned to Philips) in fact provides a good, specific example of what was meant by the term "DMOS" at the time the '075 patent was filed. The DMOS described in the Colak reference involved lateral double-diffused MOSFETs. [*See* Ex. O (Colak '879 patent) at col. 1:11-14.] As explained above, the term "double-diffused" refers to a source diffusion completely within a channel diffusion region, constructed with two sequential diffusions through the same opening. This process produces a known structure, and Figure 1 of the Colak reference provides a clear example of this characteristic structure. [Ex. M at ¶ 19.] Specifically, Colak Figure 1 shows a region 22 within a region 20 which was created with two sequential diffusions through the same opening. Another important

thing to note is that the channel region itself (P+ region 20 in Colak Figure 1) is formed by the first diffusion; without that diffusion step, there would be no functional transistor device. [*Id.* at ¶ 20.]

Since the time the ’075 patent was filed, though, the use of the term DMOS has been significantly expanded by some people. [*Id.* at ¶ 22.] The term DMOS has thus been genericized (by some) to apply to any transistor which is electrically asymmetrical (i.e. an extended drain type structure where the flow of electric current is different depending on the direction), and where the *characteristics* of the channel region, rather than its existence, are determined by a separate diffusion step. [*Id.*] Today, this use of the term “DMOS” refers not only to processes that use two sequential diffusions through the same mask, but also to devices where the characteristics of the channel region are determined by a separate diffusion using a separate mask, not necessarily in sequence. In general, the term is used today to refer loosely to any transistor structure with an extended drain region. This modern usage is the “definition” Fairchild attempts to rely upon.[16] [*Id.* at ¶17, Page 7 and ¶22, Page 10.] Such usage and such a definition was not applied at the time of the ’075 prosecution, however. [*Id.* at ¶ 18.] Accordingly, although one of ordinary skill would understand from the prosecution history that Power Integrations’ claims were not intended to encompass what were known as DMOS structures at the time, such as the Colak structure, one of skill would not read that history to exclude all structures that today might loosely be referred to as “DMOS.” [*Id.* at ¶ 22.] Indeed, to do as Fairchild suggests would exclude from the claim the preferred embodiment disclosed in the ’075 patent. [*Id.*] A construction that excludes the preferred embodiment is, of course, incorrect. *See SanDisk Corp. v. Memorex Prods.*, 415 F.3d 1278, 1285-86 (Fed. Cir. 2005) (quoting *Vitronics Corp. v. Conceptronic, Inc.*,

[16] Fairchild, however, has provided no written definition from any dictionary, treatise or any other source in the relevant time period, or even today, that supports its construction. Power Integrations has found none in its own research.

90 F.3d 1576, 1583 (Fed. Cir. 1996)). Rather, Power Integrations only disclaimed during prosecution structures like that shown in the Colak reference – structures formed by two sequential diffusions through the same mask – consistent with the understanding of "DMOS" by one of ordinary skill at that time.

b. "MOS transistor"

The parties do not appear to dispute that the language "MOS transistor" generally refers to a "a metal-oxide-semiconductor transistor." The dispute, rather, is whether the claim excludes a "DMOS" transistor and, as explained above, what such an exclusion encompasses.

Fairchild argues that the recitation of "MOS transistor" in the preamble of the claim, in combination with the file history, excludes "DMOS" from the scope of the claim. Putting aside whether the terminology in the preamble is even a limitation of the claims, as explained above the asserted claims of the '075 patent do not exclude all application to devices that Fairchild chooses to refer to as "DMOS" transistors. "DMOS" is obviously one type of MOS. Accordingly, if construed at all, "MOS transistor" should be afforded its plain and ordinary meaning of "**a metal-oxide-semiconductor device that can control the flow of current between a source terminal and a drain terminal**."[17]

c. "Substrate"

The parties do not appear to dispute that the plain meaning of "substrate" in this context refers to "**the physical material on which a microcircuit is fabricated**." Fairchild's claim construction positions, however, have previously sought to exclude from this definition of "substrate" areas that are subsequently doped to form "well regions" in the base wafer. [*See* Ex. H at 1.] The specification of the '075 patent,

[17] The IEEE Dictionary from the relevant time-frame defines "MOS transistor" as "A type of IGFET, referring specifically to the layer sequence in the gate region, namely, Metal-Oxide-Semiconductor." Ex. P at 587.

however, directly contradicts such a construction as it specifically includes well regions such as region 26 in Fig. 1 within the scope of the term "substrate." [*See* Ex. D ('075 patent) at col. 4:55-5:3, Fig. 1.] Thus, one of ordinary skill would understand the term "substrate" may encompass well regions. [Ex. M at ¶ 15.]

Because it is unclear from Fairchild's current claim construction positions whether it continues to assert that the definition of substrate (and "within the substrate") must exclude a well or other subsequently doped region, or whether Fairchild intends to argue it does not infringe the claim because certain portions of its accused devices are formed in wells, Power Integrations requests the Court to construe "substrate" consistent with the specification to mean "**the physical material on which a microcircuit is fabricated, which may include subsequently formed or doped regions such as a well region**."

d. "A pair of laterally spaced pockets of semiconductor material of a second conductivity type within the substrate"

Again, the parties do not appear to dispute that the plain meaning of a "pair of laterally spaced pockets of semiconductor material of a second conductivity type" refers to a pair of (or two) laterally spaced pockets of semiconductor material of the opposite conductivity type from the substrate. However, there are two remaining disputes. First, as with the definition of "substrate," Fairchild has previously taken the position that the laterally spaced pockets being "within the substrate" means that they must be within the un-doped wafer and cannot be within a well region. [Ex. Q at Exhs. A at 1-2 & C at 10).] As explained above, though, the specification expressly includes well regions within its definition of substrate. In addition, the '075 patent specification and Figure 1 explicitly show that one of the laterally spaced pockets (region 24) is located in a well (region 26) in a preferred embodiment. [*See* Ex. D ('075 patent) at col. 2:51-57; Fig. 1.] Accordingly, to construe this claim limitation to exclude locating one or both of the pockets within a well region in the substrate would exclude the disclosed preferred

embodiment. [*See* Ex. M at ¶ 15.] In addition, the plain meaning of "within" would encompass location anywhere inside the boundaries of the substrate and would not on its face exclude any particular region in the substrate.[18] Because it is unclear whether Fairchild intends to maintain its non-infringement position regarding this limitation—its proffered construction is ambiguous in this respect—Power integrations asks the Court to construe this limitation in accordance with its plain meaning and consistent with the specification as "**a pair of (or two) laterally spaced pockets of semiconductor material of the opposite conductivity type from the substrate located within the boundaries of the substrate, including, for example, in a well region within the substrate.**"

The second dispute over this claim language again stems from Fairchild's assertion that "Power Integrations disclaimed reading this element on a DMOS transistor." As explained above, Power Integrations did not disclaim what Fairchild now calls "DMOS," but specifically distinguished the claimed invention over the prior art Colak reference which showed a double-diffused structure that was consistent with the plain meaning of DMOS in 1988, including a source diffusion (one of the "pockets") completely within a diffusion that defined the channel. [Ex. R at 2-4.] Accordingly, Power Integrations disagrees with Fairchild that this claim limitation, or the claim as a whole, should be construed to exclude everything Fairchild chooses to call DMOS, i.e. its own accused products.

e. "a surface adjoining layer of material of the first conductivity type on top of an intermediate portion of the extended drain region between the drain contact pocket and the surface-adjoining positions"

There does not appear to be a material dispute over the plain meaning of the words of this clause. Fairchild's construction recites that the surface adjoining layer is

[18] Webster's Dictionary explains that "within" is "used as a function word to indicate enclosure or containment [or] to indicate situation or circumstance in the limits or compass of." Ex. L at 1355.

"above" a portion of the extended drain region; Power Integrations' construction provides that the relevant layer is "on top of" a portion of the extended drain. Power Integrations' construction is better, because the claim language itself uses "on top of" rather than Fairchild's more ambiguous "above" terminology. Fairchild's slight variation in the language is likely intended to support an argument that the next clause ("said top layer") lacks sufficient antecedent basis. Such an attempt to introduce ambiguity and then construe the claim so as to invalidate it (if, indeed, the construction would do so), would be contrary to one of the core canons of claim construction. *See Phillips*, 415 F.3d at 1327 (noting "ambiguity in the claim language should [] be resolved in a manner that would preserve the patent's validity"); *Lewmar Marine, Inc. v. Barient, Inc.*, 827 F.2d 744, 749 (Fed. Cir. 1987) ("[I]n determining validity, a claim must be construed to uphold its validity if possible."). Irrespective of Fairchild's motivation, Power Integrations does not believe it is necessary to construe this clause of the claim at all because the meaning of the individual words is clear and the picture conjured by those words is easily understood by a jury with reference to the picture (Figure 1) in the patent. To "construe" this language further would only confuse the issues.

The real dispute, if any, again lies with Fairchild's repeated assertion that the claim language further supports its DMOS disclaimer argument. As explained above, Power Integrations disagrees that this phrase (or any other in the claim or the prosecution history) excludes application of the claim to Fairchild's devices.

f. "said top layer of material"

Fairchild has asserted that this claim language lacks antecedent basis and allegedly cannot be construed. Fairchild's argument borders on frivolous. Simply reading the claim makes it plain to anyone that the "said top layer" is the "surface adjoining layer" introduced in the immediately previous clause and described as being "on top of" the extended drain region. In addition, the specification repeatedly refers to the surface adjoining layer as a "top layer," for example "top layer 27" of Figure 1. [*See,*

e.g., Ex. D ('075 patent) at col. 2:57-63; 2:65; 3:10-14; 3:30-32.] Accordingly, there is nothing ambiguous about the claim language, and its meaning is so clear that it need not be construed. [Declaration of Mike Shields ("Shields Decl.") ¶ 4.] If the Court is concerned about any ambiguity in the language, though, Power Integrations would propose the following construction: "**The top layer of material in this limitation refers to the surface adjoining layer.**"

g. "being subject to application of a reverse-bias voltage"

The claim goes on to recite that the top layer and said substrate are "subject to application of a reverse-bias voltage." The parties have provided competing constructions addressing the technical definition of "reverse-bias" in the context of transistor devices. Power Integrations believes its construction, "a voltage applied across a rectifying junction with a polarity that provides a high-resistance path," is the more technically accurate definition. [Shields Decl. ¶ 5.] However, the real import of the limitation, as explained in the specification, is that the top layer and the substrate are connected together, and thus grounded. [*See* Ex. D ('075 patent) at col. 2:62-3 (the top layer is either connected to the substrate or left floating); 3:10-15 ("By adding the top layer 27 over the extended drain region 26 and connecting this top layer to the substrate 11….").] This is how one of ordinary skill would understand the claim limitation. [Shields Decl. ¶ 5.] Thus, Power Integrations suggests that, to truly aid the jury in its understanding of the claim, the recited language be construed to mean that **"the surface adjoining layer of material and the substrate recited in the claims are connected in some way to 'ground.'"**

h. "substrate region thereunder which forms a channel"

The final dispute in the construction of the claims of the p-top patent relates to the clause beginning "a gate electrode…" which includes the recitation of a "substrate region thereunder [the gate] which forms a channel." Initially, the "channel" of a transistor is a well-known term that refers to the region in which the electrical charge flows when the

transistor is active. [Ex. M at ¶ 16.] In its initial claim construction contentions and non-infringement contentions, Fairchild originally asserted that the channel could not be formed in well material. [*See* Ex. H at 1-2, 4.] However, as noted above, nothing in the patent precludes the channel from being formed in "well" material or otherwise doped material beneath the insulated gate. Indeed, the preferred embodiment shows that the channel region has additional dopant both to adjust the threshold voltage and to avoid punch through voltage breakdown. [*See* Ex. D ('075 Patent) at col. 2:45-51; Fig. 1; Ex. M at ¶ 16.] Because Fairchild's currently proffered construction is again silent on this issue, it is unclear if Fairchild intends to continue to assert that the channel region cannot include material other than the bare "substrate." To avoid any latent ambiguity, Power Integrations suggests the Court construe this limitation in accordance with its plain meaning and the specification to mean that "**the channel is formed underneath the insulated gate in the substrate which can include, for example, being formed in a well or otherwise doped region located underneath the gate.**" The physical location of the channel between the source contact pocket and the nearest surface-adjoining position of the extended drain region—which is part of Fairchild's construction—is set out in the plain and simple words of the claim and need not be reiterated in the Court's construction.

Fairchild again relies on this claim limitation as further alleged support for its argument for a broad DMOS exclusion. As explained above, though, all of the claim language Fairchild relies upon simply confirms that the discussion of DMOS in the file history was focused on and can only be read to relate to the DMOS transistors that existed at the time as exemplified by the Colak patent addressed during prosecution. Power Integrations disagrees with Fairchild that this claim language, or the claim, when properly viewed in the context of the specification, the prosecution history, and the state of the art, excludes coverage of anything other than a DMOS device as defined in 1988 (which does not include Fairchild's accused high voltage transistor devices).

V. CONCLUSION

For the foregoing reasons, Power Integrations requests that the Court adopt its construction for the disputed terms in the asserted claims of the patents-in-suit.

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APPENDIX

POWER INTEGRATIONS' PROPOSED CLAIM CONSTRUCTIONS
(constructions in bold)

Claim Term	Power Integrations' Proposed Construction
Frequency jittering ('876 patent claim 1)	Frequency jitter in the context of the patent is "**a controlled and predetermined change or variation in the frequency of a signal**."
Coupled ('876 patent claim 1)	"**Two circuits are coupled when they are connected such that voltage, current, or control signals pass from one to the other.**"
Primary voltage ('876 patent claims 17 & 19)	"**A base or initial voltage**."
Secondary voltage sources ('876 patent claims 17 & 19)	"**One or more voltage sources used to generate the secondary voltage**."
Secondary voltage ('876 patent claim 17)	"**A subsequent or additional voltage**."
Maximum duty cycle signal comprising an on-state and an off-state ('366 patent claims 1 & 10)	"**A maximum duty cycle signal is a signal the purpose of which is to limit the maximum "on-time" of a power switch during an on/off switching cycle. The on-state is the state of the maximum duty cycle signal that allows the switch to be active or "on" [and is independent of the logic state of the signal itself]. Correspondingly, the off-state is the state of the maximum duty cycle signal that results in the switch being placed or held in its inactive or "off" condition [and, again, is independent of logic state.]**" If Fairchild represents that the logic state issue is no longer disputed (i.e., it does not matter whether one state is represented logically by a "low" instead of a "high" signal, or vice versa), the bracketed phrases can be removed to simplify the construction further.
Soft start circuit ('366 & '851 patents)	"Soft start circuit should" be construed according to 35 U.S.C. § 112 ¶ 6 to include the circuit structures disclosed in the specification for performing the recited functions, and equivalents thereof. The corresponding structures for the "soft start circuit" are shown in Figures 3, 6 and 9 of the '366 patent specification and described in the associated discussion at 6:7-17; 6:35-7:18; 11:40-50 and 12:5-10.
Frequency variation circuit that provides a frequency variation signal ('366 patent claim 14, '851 patent claims 1, 2, 11, 16)	A "frequency variation circuit" is "**a structure that provides the 'frequency variation signal.'**" As defined in the specification, "frequency variation signal" is "**an internal signal that cyclically varies in magnitude during a fixed period of time and is used to modulate the frequency of the oscillation signal within a predetermined frequency range**."

Claim Term	Power Integrations' Proposed Construction
MOS transistor ('075 patent claims 1 & 5)	"**A metal-oxide-semiconductor device that can control the flow of current between a source terminal and a drain terminal**." Power Integrations disagrees with Fairchild that this term, or this claim, excludes all application to devices that may be referred to as "DMOS" transistors.
Substrate ('075 patent claim 1)	A "substrate" as expressly defined in the '075 patent is "**the physical material on which a microcircuit is fabricated, which may include subsequently formed or doped regions such as a well region**."
A pair of laterally spaced pockets of semiconductor material of a second conductivity type within the substrate ('075 patent claim 1)	"**A pair of (or two) laterally spaced pockets of semiconductor material of the opposite conductivity type from the substrate located within the boundaries of the substrate, including, for example, in a well region within the substrate.**" Power Integrations disagrees with Fairchild that this phrase, or this claim, excludes all application to devices that may be referred to as "DMOS" transistors.
Being subject to application of a reverse-bias voltage ('075 patent claim 1)	Reverse-bias in this context is a voltage applied across a rectifying junction with a polarity that provides a high-resistance path. In this context, the phrase "being subject to application of a reverse-bias voltage" means that "**the surface adjoining layer of material and the substrate recited in the claims are connected in some way to 'ground.'**"
Substrate region thereunder which forms a channel ('075 patent claim 1)	This phrase should be afforded its plain meaning: "**the channel is formed underneath the insulated gate in the substrate which can include, for example, being formed in a well or otherwise doped region located underneath the gate**." Power Integrations disagrees with Fairchild that this phrase, or this claim, excludes all application to devices that may be referred to as "DMOS" transistors.

Agreed-upon constructions

Adjoining ('075 patent claim 1)	"**To be very near, next to, or touching.**"
Frequency variation circuit ('366 patent claim 14, '851 patent claims 1, 2, 11, & 16)	"**A structure that provides the 'frequency variation signal.'**"
Monolithic device ('366 patent claims 2 & 16, '851 patent claims 2 & 16)	"**A device constructed from a single crystal or other single piece of material.**"

Fairchild has asserted that the following additional terms require construction. Power Integrations disagrees with that contention and believes the terms are subject to plain, English-language interpretations (or that they are dealt with above in the context of other constructions).

Cycling ('876 patent claim 17)	If the Court believes this term requires construction, Power Integrations proposes the following construction: "**Using in a repeating sequence or a pattern.**"
Combining ('876 patent claim 17)	If the Court believes this term requires construction, Power Integrations proposes "combining" be construed to mean "**adding together**."
Supplemental voltage ('876 patent claim 19)	If the Court believes this term requires construction, Power Integrations proposes the following construction: "**a voltage in addition to the primary voltage**."
a surface adjoining layer of material of the first conductivity type on top of an intermediate portion of the extended drain region between the drain contact pocket and the surface-adjoining positions ('075 patent claim 1)	If the Court believes this term requires construction, Power Integrations proposes the following construction: "**A layer of material of the same conductivity type as the substrate located on top of a portion of the extended drain region between the drain contact pocket and surface adjoining positions of the extended drain region.**" Power Integrations disagrees with Fairchild that this phrase, or this claim, excludes all application to devices that may be referred to as "DMOS" transistors.
said top layer of material ('075 patent claim 1)	If the Court believes this term requires construction, Power Integrations proposes the following construction: "**The top layer of material in this limitation refers to the surface adjoining layer.**"

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CERTIFICATE OF SERVICE

I hereby certify that on December 28, 2005, I electronically filed **POWER INTEGRATIONS' OPENING CLAIM CONSTRUCTION BRIEF** with the Clerk of Court using CM/ECF which will send notification of such filing(s) to the following individuals. A copy of this document was also served by hand on these individuals on this date.

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I hereby certify that on December 28, 2005, I have e-mailed and mailed via Federal Express, the document(s) to the following non-registered participants:

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